To view the degree maps and expected learning outcomes for Biology's undergraduate degrees, go to www.pdx.edu/undergraduate-programs.

ADMISSION REQUIREMENTS

Admission to the department is based on general admission to the University. See Admissions Requirements (p. 5) for more information.

BIOLGY B.A./B.S.

REQUIREMENTS

In addition to satisfying general University requirements, a student majoring in biology must meet general department requirements as well as fulfill the biology major requirements.

General requirements are completion of two terms of statistics or two terms of calculus; three terms of science majors’ introductory chemistry with laboratory; one term of organic chemistry; Ph 201, Ph 214; and 12 elective credits from geology, physics, computer science, environmental science, or chemistry at the 200 level or higher. All biology majors must complete at least 60 credits in biology including three terms of science majors’ introductory biology with laboratory. Of the 60 credits in biology at least 44 credits must be upper-division coursework for the major.

Biology courses taken pass/no pass are not acceptable toward fulfilling departmental major requirements, with the exception of courses numbered Bi 401, Bi 404, Bi 405, Bi 406, and Bi 407 which are only offered pass/no pass. Of the 60 credits required in biology, at least 46 credits must be in courses other than Bi 401, Bi 404, Bi 405, Bi 406, and Bi 407. The remaining 14 credits may include no more than a total of 6 credits in Bi 401, Bi 404, Bi 405, and Bi 406.

Biology majors interested in the Biology Honors Research Program may obtain information in the Biology Dept. Office.

General Departmental Requirements

All Biology majors must complete the coursework listed below in addition to the Biology major requirements.

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Ch 221</td>
<td>4</td>
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<tr>
<td>Ch 222</td>
<td>4</td>
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<tr>
<td>Ch 223</td>
<td>4</td>
</tr>
<tr>
<td>Ch 227</td>
<td>1</td>
</tr>
<tr>
<td>Ch 228</td>
<td>1</td>
</tr>
<tr>
<td>Ch 229</td>
<td>1</td>
</tr>
<tr>
<td>Ch 331</td>
<td>4</td>
</tr>
<tr>
<td>Ch 334</td>
<td>4</td>
</tr>
<tr>
<td>Ph 201</td>
<td>4</td>
</tr>
<tr>
<td>Ph 214</td>
<td>1</td>
</tr>
<tr>
<td>Mth 251</td>
<td>0-4</td>
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<tr>
<td>Mth 252</td>
<td>0-4</td>
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<tr>
<td>Stat 243</td>
<td>4</td>
</tr>
<tr>
<td>Stat 244</td>
<td>4</td>
</tr>
</tbody>
</table>

Science Electives: Any combination of courses at the 200+ level (not including requirements listed above) from the following departments: Ch, ESM, G, Ph, or CS

Biology Major Requirements

Lower Division Biology Core

Enrollment requires concurrent enrollment in Ch 221 & Ch 227 or prior completion of Ch 221 & Ch 227

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bi 211</td>
<td>4</td>
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<tr>
<td>Bi 212</td>
<td>4</td>
</tr>
<tr>
<td>Bi 213</td>
<td>4</td>
</tr>
<tr>
<td>Bi 214</td>
<td>1</td>
</tr>
<tr>
<td>Bi 215</td>
<td>1</td>
</tr>
<tr>
<td>Bi 216</td>
<td>1</td>
</tr>
</tbody>
</table>

Upper Division Biology Core

Complete a minimum of 44 upper division Biology credits and satisfy Requirements 1, 2, and 3 below

Requirement 1

Complete at least one course from each of Areas A, B, and C

Area A: Cellular/Molecular
<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bi 334</td>
<td>4</td>
</tr>
<tr>
<td>Bi 336</td>
<td>5</td>
</tr>
<tr>
<td>Bi 341</td>
<td>4</td>
</tr>
</tbody>
</table>
Area B: Systems/Organisms  
Bi 320  Introduction to Organismal Physiology  4  
Bi 330  Introduction to Plant Biology  4  
Bi 380  Microbiology  4  
Bi 386  Invertebrate Zoology  6  
Bi 387  Vertebrate Zoology  6  

Area C: Ecology/Evolution  
Bi 357  General Ecology  4  
Bi 358  Evolution  4  

Requirement 1  
Choose at least two courses at the 300 or 400 level with a major laboratory or field component. Bi 386 and Bi 387 will satisfy Requirement 2 only if the course is not used to satisfy Requirement 1.

Approved Lab—Field Courses Choose at least two  
Bi 301  Human Anatomy and Physiology  4  
Bi 302  Human Anatomy and Physiology  4  
Bi 303  Human Anatomy and Physiology  4  
Bi 326  Comparative Vertebrate Embryology  5  
Bi 328  Comparative Vertebrate Anatomy  5  
Bi 337  Cell Biology Laboratory  2  
Bi 361  Introduction to Marine Biology Laboratory  1  
Bi 386  Invertebrate Zoology  6  
Bi 387  Vertebrate Zoology  6  
Bi 388  Microbiology Techniques  2  
Bi 413  Herpetology  6  
Bi 414  Ornithology  6  
Bi 415  Mammalogy  6  
Bi 416  Marine Mammals  6  
Bi 431  Recombinant DNA Techniques Laboratory  2  
Bi 432  Plant Diversity and Evolution  5  
Bi 441  Plant Physiology  5  
Bi 450  Phylogenetic Biology  4  
Bi 455  Histology  6  
Bi 471  Plant Ecology  4  
Bi 473  Field Sampling  4  
Bi 476  Population Ecology  5  

Requirement 2  
Choose at least two courses at the 300 or 400 level with a major laboratory or field component. Bi 386 and Bi 387 will satisfy Requirement 2 only if the course is not used to satisfy Requirement 1.

Courses approved for use from other departments from the list below  
A maximum of 8 credits taken at the 300-400 level and passed with a C- or better from the following departments may be applied toward major requirements with prior Biology department approval. These credits cannot be substituted for those in Areas A, B, and C, or for the BI 412 - BI 499 credit requirements.

<table>
<thead>
<tr>
<th>Anthropology (Anth)</th>
<th>Business (BA)</th>
<th>Chemistry (Ch)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computing Science (CS)</td>
<td>Economics (Ec)</td>
<td>Environmental Science and Management (ESM)</td>
</tr>
<tr>
<td>Geography (Geog)</td>
<td>Geology (G)</td>
<td>Philosophy (Phil)</td>
</tr>
<tr>
<td>Physics (Ph)</td>
<td>Psychology (Psy)</td>
<td>Public Health Education (PHE)</td>
</tr>
</tbody>
</table>

Statistics (Stat)  
Subtotal: 27-30

BIOLOGY MINOR  
REQUIREMENTS  
To earn a minor in biology, a student must complete at least 27 credits in biology (at least 9 credits of which must be taken in residence at PSU) to. Courses must include three terms of science majors’ introductory biology with laboratory (Bi 251, Bi 252, Bi 253) and at least one course each of from Areas A, B, and C.

Lower Division Biology Core  
Enrollment requires concurrent enrollment in Ch 221 & Ch 227 or prior completion of Ch 221 & Ch 227

| Bi 211 Principles of Biology I | 4 |
| Bi 212 Principles of Biology II | 4 |
| Bi 213 Principles of Biology III | 4 |
| Bi 214 Principles of Biology Lab I | 1 |
| Bi 215 Principles of Biology Lab II | 1 |
| Bi 216 Principles of Biology Lab III | 1 |

Upper-division credits to include at least one course from each of the following three areas (12-15 credits)  
Area D: Cellular/Molecular  
Bi 334 Molecular Biology  4  
Bi 336 Cell Biology  5  
Bi 341 Introduction to Genetics  4  

Area B: Systems/Organisms  
Bi 320 Introduction to Organismal Physiology  4  
Bi 330 Introduction to Plant Biology  4  
Bi 380 Microbiology  4  
Bi 386 Invertebrate Zoology  6  
Bi 387 Vertebrate Zoology  6  

Area C: Ecology/Evolution  
Bi 357 General Ecology  4  
Bi 358 Evolution  4  

Subtotal: 27-30

Courses taken under the undifferentiated grading option (pass/no pass) cannot be used to fulfill biology minor requirements. Bi 401, Bi 404, Bi 405, Bi 406, and Bi 407 are not allowed for the minor. Additional courses may be required as prerequisites.

SECONDARY EDUCATION  
Adviser: S. Eppley

Students who wish to teach biology in secondary schools should complete one of the two programs shown. Courses are to be taken for differentiated grades, except for those offered for pass/no pass only. Students must have at least a 3.00 GPA in the recommended science courses and must earn at least a C in each course of the endorsement area. Students should also take Psy 311.

REQUIREMENTS  
Biology majors  
The student must complete a biology major’s program as outlined above, to include an upper-division course each in microbiology, ecology, genetics, cell biology, and evolution. (See adviser.)

Nonbiology majors  
Bi 234 Elementary Microbiology  4  
Bi 235 Microbiology Laboratory  2  
Bi 341 Introduction to Genetics  4  
Bi 357 General Ecology  4  
Bi 358 Evolution  4  

Upper-division biology elective in botany or field oriented course 4
Graduate programs

The Department of Biology offers graduate degrees leading to the Master of Arts or Master of Science, and the Master of Arts in Teaching or Master in Teaching Science/Biology. The department also offers an advanced Ph.D. degree in biology. The latter specialized degree is attained through the successful completion of requirements as stipulated by the department and the student’s research committee (see below).

ADMISSION REQUIREMENTS

In addition to the instructions for admission to the graduate program (p. 32), the department requires the following information from each applicant to the M.A., M.S., M.S.T., or Ph.D. program in biology:

1. Satisfactory scores on the general Graduate Record Examination (GRE).
2. Two letters of evaluation from persons qualified to assess the applicant’s promise as a graduate student.
3. The student should also submit an application directly to the Biology department using the online form found on the department’s website.

The prospective student should realize that a high GPA and acceptable GRE scores do not guarantee admission to the graduate programs in biology because of variables including the availability of appropriate advisers, research space, and departmental resources.

BIOLOGY M.A./M.S.

See University master's degree requirements (p. 40). Specific departmental requirements are listed below.

Satisfactory completion of at least 45 credits of approved graduate-level courses required for a master's degree. Students must complete Bi 598 Graduate Research Prospectus, and Bi 599 Graduate Grant Writing in the fall and winter quarters following admission to the program. The student must complete at least 30 credits in the field of biology. No more than 9 credits may be in Bi 503 Thesis. No more than a total of 12 credits may be in Bi 501 and Bi 505 Reading and Conference. No more than a total of 9 credits may be in Bi 507 Seminar. A maximum of 12 credits may be programmed as electives in fields related to biology in consultation with the degree adviser. Successful completion of a final oral examination and a thesis is required. Full time students must complete their degree within 4 years of entry into the program.

BIOLOGY M.A.T./M.S.T.

The College of Liberal Arts and Sciences offers the M.A.T./M.S.T. degrees in Science/Biology. In consultation with the graduate adviser, the student should establish the degree program before the completion of 15 credits of coursework. The program must include a minimum of 45 credits in approved graduate courses, to include a minimum of 24 credits in the area of concentration. Students must complete Bi 598 Graduate Research Prospectus, and Bi 599 Graduate Grant Writing in the fall and winter quarters following admission to the program. At least 9 credits, but no more than 15 credits, must be in education courses and must include Ed 520 Introduction to Education and Society. The 45 credits required must include 6 credits in either Bi 501 Project Track: Research Project relating to biology teaching (i.e. curriculum module, grant proposal, community development project) as approved by student’s committee; or Bi 504 Practicum Track: 6 credits in practicum/internship/community outreach experience as approved by student’s committee. In order to fulfill requirements for the degree, the student must satisfactorily complete the degree program and pass both a final written examination and a final oral examination.

BIOLOGY CONTINUING TEACHING LICENSE

The requirements for the continuing teaching license include satisfactory completion of 45 credits of upper-division and graduate work earned subsequent to receipt of a bachelor’s degree. The 45 credits are in addition to those required for the initial teaching license. For the continuing endorsement in biology, the student must take at least 15 credits of adviser-approved graduate-level work distributed to strengthen the student’s background in science. Although no specific courses in science are required for the continuing endorsement, combined undergraduate and graduate preparation must include at least 36 credits in biology and must include specific courses. Each student’s program is tailored to meet the needs of the individual and the requirements of the continuing endorsement and the continuing license. See Licensure (p. 97) for the required education courses.

BIOLOGY PH.D.

Prospective Ph.D. students are required to take Bi 698 Graduate Research Prospectus, Bi 699 Graduate Grant Writing, and Bi 520 Ethical Practice in the Life Sciences in the fall, winter, and spring quarters following admission to the program. Students must also complete 6 credits of Bi 607 Seminar, 27 credits of Bi 603 Dissertation, and 39 credits of coursework at the 500/600 level and above.

The student must also have taken a departmental comprehensive exam by the fifth quarter after entering the program, followed the next quarter by a formal defense of their Ph.D. prospectus. Successful completion of the degree is contingent on the completion of original research, and presentation of results in a public oral defense and production of a formal dissertation that is submitted to and approved by the student’s research committee and the University’s Office of Graduate Studies. Students must complete their degree within seven years of entry into the program.

Black Studies

150 Extended Studies Building (XSB) 503-725-3472
www.pdx.edu/blackstudies

• B.A., B.S.—Black Studies
• Minor in Black Studies
• Postbaccalaureate Certificate in Black Studies

The Department of Black Studies is an academic interdisciplinary unit within the College of Liberal Arts and Sciences. The primary focus is in the social sciences and liberal arts. The Department of Black Studies is devoted to the exploration and analysis of the history, politics, and culture of African people in the United States, the Caribbean, and Africa. It seeks to objectively explore the black experience, to illuminate the...